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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/591,076

08/30/2006

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EXAMINER

HU, SHOUXIANG

ART UNIT

PAPER NUMBER

2811

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/591,076	Applicant(s) KUSUNOKI, KATSUKI	
	Examiner Shouxiang Hu	Art Unit 2811	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 August 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) 8-17 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7, 18 and 19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>08/30/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Claims 8-17 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on August 20, 2008.

Claim Objections

2. Claim 5 is objected to because of the following informalities:

The term of "5claim 1" should read as: --claim 1--.

In addition, this claim recites the term of "recess portions", but fails to clarify their relationship with the same term already defined in claim 1.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-7, 18 and 19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the subject matters that a part of a substrate portion of the device side surface has recessed portions in a side direction of the device.

However, the term of "the device side surface" recited therein lacks a sufficient antecedent basis in the claim, as it is not clear which of the multiple side surfaces that naturally exist in the instant invention it definitely refers to.

In addition, it also fails to clarify what is definitely the direction of the recited "side direction of the device", given that the device naturally has multiple side surfaces, including at least top and bottom ones, and lateral side ones as well.

Furthermore, it is not clear whether the recited "side direction" is a direction along the direction of an edge of the side surface or along the normal direction of the side surface.

Claim 5 recites the subject matters that recessed portions are existing maintaining a distance of 4 to 40 μm . But, it fails to clarify whether it means that the entire recessed portions are arranged within the recited distance, or that the neighboring two of the recited recess portions are kept at the recited distance.

Claim 5 recites the subject matter of a width of 1 to 20 μm . But, it fails to clarify whether it means that the entire recessed portions are arranged within the recited width or that each of the recited recess portions has the recited width.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the

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applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1-5, 18 and 19, insofar as being in compliance with 35 U.S.C. 112, are rejected under 35 U.S.C. 102(e) as being anticipated by Akaike (Akaike et al., US 6,924,513).

Akaike discloses a compound semiconductor light-emitting device (4, 10 and/or 11), having a light-emitting layer (42, or 107-110) on a substrate (41 or 108), wherein at least a part of a substrate portion of one device side surface has recessed portions in a side direction (i.e., the recessed portions are recessed along a direction such as the normal direction or an edge direction of a side surface) of the device.

Regarding claims 2 and 4, it is further noted that the entire substrate in Akaike is formed of a compound semiconductor (such as GaP).

Regarding claim 3, it is further noted that the above light-emitting layer comprises an n-type or p-type compound semiconductor and is of the pn junction type.

Regarding claim 5, it is further noted that at least the center-to-center distance of the neighboring two recessed portions from the above recessed portions has a distance such as 5 um (see col. 11, lines 26-27).

Regarding claims 18 and 19, it is further noted that the above light-emitting device can inherently function as a lamp and/or light source.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 6 and 7, insofar as being in compliance with 35 U.S.C. 112, are rejected under 35 U.S.C. 103(a) as being unpatentable over Akaike.

The disclosure of Akaike is discussed as applied to claims 1-5, 18 and 19 above.

Regarding claim 6, Akaike further discloses that the width of each of the recessed portions can be as large as 5 um (see col. 11, lines 26-27).

Although Akaike does not explicitly disclose that the depth of each of the recessed portions can be a depth that is within 0.5 to 10 um, it is noted that the depth of the recessed portions formed for improving light-extracting efficiency, such as the one shown in Akaike, are art-recognized resulted-oriented, important parameter, subject to routine experimentation and optimization.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to make the device of Akaike with the depth of recessed portions being anything within a range such as between 0.6 and 9.5 um, so that a light emitting device with optimized light-extracting performance would be obtained, as it has being held that:

“[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.” In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

Regarding claim 7, although Akaike does not expressly disclose that the light-emitting device is of the flip-chip type, it is noted that it is well known in the art that light-emitting devices are commonly and desirably housed/packaged in a flip-chip manner for achieving desired housing and/or packaging for the device, and/or for achieving the desired light-extraction from the substrate side.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the art-well-known flip-chip-type housing/packaging into the device of Akaike, so that a light-emitting device with desired housing and/or packaging for the device and/or with desired light-extraction from the substrate side would be obtained.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. References B-E are cited as being related to a light-emitting device.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shouxiang Hu whose telephone number is 571-272-

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1654. The examiner can normally be reached on Monday through Friday, 8:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynne Gurley can be reached on 571-272-1670. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Shouxiang Hu/
Primary Examiner, Art Unit 2811